

## CLAIMS

What is claimed is:

54B  
1 1. An irrigation system for a medical device,  
2 comprising:  
3 an irrigation reservoir;  
4 a pump coupled to said irrigation reservoir;  
5 an irrigation line coupled to said pump;  
6 a pressure sensor that senses a pressure within said  
7 irrigation line;  
8 an accumulator that stores irrigation fluid; and,  
9 a controller that is coupled to said pressure sensor  
10 and said pump to control the pressure within said  
11 irrigation line.

1 2. The irrigation system of claim 1, wherein said  
2 pressure sensor includes a flexible membrane that  
3 separates a first chamber from a second chamber, said  
4 first chamber being in fluid communication with said  
5 irrigation line, said second chamber being in fluid  
6 communication with a pressure transducer of said  
7 controller.

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1 3. The irrigation system of claim 1, further  
2 comprising a valve coupled to said irrigation line and  
3 said controller.

Sub B2

1 4. The irrigation system of claim 1, wherein said  
2 controller controls a speed of said pump and a flowrate  
3 through said irrigation line.

Sub B2

1 5. The irrigation system of claim 4, wherein said  
2 controller varies said pump speed in response to a  
3 variation in the irrigation line pressure sensed by said  
4 pressure sensor.

Sub B2

1 6. The irrigation system of claim 1, wherein said  
2 controller can determine a flowrate generated by said  
3 pump.

1 7. The irrigation system of claim 6, wherein said  
2 controller determines an actual fluidic resistance from  
3 the flowrate and provides an output signal if the actual  
4 fluidic resistance is greater than a threshold value.

1 <sup>10</sup>8. The irrigation system of claim 6, wherein said  
2 controller determines an actual volume of irrigation  
3 fluid pumped by said pump from the flowrate and provides  
4 an output signal if the actual volume of irrigation fluid  
5 is greater than a threshold value.

6 \* 9. An irrigation system for a medical device,  
7 comprising:  
8 an irrigation reservoir;  
9 a pump coupled to said irrigation reservoir, said  
10 pump generates a flowrate;  
11 an irrigation line coupled to said pump; and,  
12 a controller that can determine the flowrate  
13 generated by said pump.

13 <sup>13</sup> 10. The irrigation system of claim 9, wherein said  
14 pump has a speed sensor coupled to said controller.

1 <sup>103</sup> 11. The irrigation system of claim 9, wherein said  
2 controller determines an actual fluidic resistance from  
3 the flowrate and provides an output signal if the actual  
4 fluidic resistance is greater than a threshold value.

1 <sup>7</sup> 12. The irrigation system of claim 9, wherein said  
2 controller determines an actual volume of irrigation  
3 fluid pumped by said pump from the flowrate and provides

4 an output signal if the actual volume of irrigation fluid  
5 is greater than a threshold value.

sub 13. A medical system, comprising:

2 an irrigation system that includes;

3 an irrigation reservoir;

4 an irrigation pump that is coupled to said irrigation  
5 reservoir;

6 an irrigation line coupled to said pump;

7 a pressure sensor that senses a pressure within said  
8 irrigation line;

9 an accumulator that stores irrigation fluid;

10 a controller that is coupled to said pressure sensor  
11 and said irrigation pump to control the pressure within  
12 said irrigation line;

13 an aspiration system that includes;

14 an aspiration pump;

15 an aspiration line coupled to said aspiration pump;

16 an aspiration pressure sensor that senses a vacuum  
17 pressure within said aspiration line;

18 a medical device that is coupled to said irrigation  
19 line and said aspiration line.

1 \*14. The medical system of claim 13, wherein said  
2 pressure sensor includes a flexible membrane that  
3 separates a first chamber from a second chamber, said  
4 first chamber being in fluid communication with said

5 irrigation line, said second chamber being in fluid  
6 communication with a pressure transducer of said  
7 controller.

1 103 15. The medical system of claim 13, further  
2 comprising a valve coupled to said irrigation line and  
3 said controller.

1 Sub B6 16. The medical system of claim 13, wherein said  
2 controller controls a speed of said irrigation pump and a  
3 flowrate through said irrigation line.

1 Sub B5 A5 17. The medical system of claim 16, wherein said  
2 controller varies said pump speed in response to a  
3 variation in the irrigation line pressure sensed by said  
4 pressure sensor.

1 Sub B8 18. The medical system of claim 13, wherein said  
2 controller can determine a flowrate generated by said  
3 irrigation pump.

1 103 19. The medical system of claim 18, wherein said  
2 controller determines an actual fluidic resistance from  
3 the flowrate and provides an output signal if the actual  
4 fluidic resistance is greater than a threshold value.

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1 20. The medical system of claim 18, wherein said  
2 controller determines an actual volume of irrigation  
3 fluid pumped by said pump from the flowrate and provides  
4 an output signal if the actual volume of irrigation fluid  
5 is greater than a threshold value.

1 21. The medical system of claim 19, wherein said  
2 controller reduces a power of said medical device if the  
3 actual fluidic resistance is greater than a device  
4 threshold value.

1 22. The medical system of claim 19, wherein said  
2 controller changes a speed of said aspiration pump if the  
3 actual fluidic resistance is greater than a pump  
4 threshold value.

1 23. The medical system of claim 13, further  
2 comprising a valve that is coupled to said irrigation  
3 line and said aspiration line.

1 24. A method for controlling a pressure of an  
2 irrigation line of a medical irrigation system,  
3 comprising:  
4 sensing a variation in the irrigation line pressure  
5 with a pressure sensor; and,

6 varying the speed of a pump that is coupled to the  
7 irrigation line in response to the sensed variation in  
8 irrigation line pressure.

1 25. The method of claim 17, closing the irrigation  
2 line and reversing a direction of the pump.

1 26. A method for determining a flowrate through an  
2 irrigation line of a medical system, comprising:  
3 sensing a speed of a pump that generates a flowrate  
4 of the irrigation fluid;  
5 determining the flowrate from the pump speed.

1 27. The method of claim 26, determining an actual  
2 fluidic resistance from the flowrate.

1 28. The method of claim 27, generating an output  
2 signal if the fluidic resistance is greater than a  
3 threshold value.

1 29. The method of claim 27, reducing a power of a  
2 medical device if the actual fluidic resistance is  
3 greater than a threshold value.

1 30. The method of claim 27, changing the speed of an  
2 aspiration pump if the actual fluidic resistance is  
3 greater than a threshold value.

1 31. The method of claim 27, determining an actual  
2 volume of irrigation fluid pumped by the pump.

1 32. The method of claim 31, generating an output  
2 signal if the actual volume of irrigation fluid is  
3 greater than a threshold value.

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